

FIG. 1A

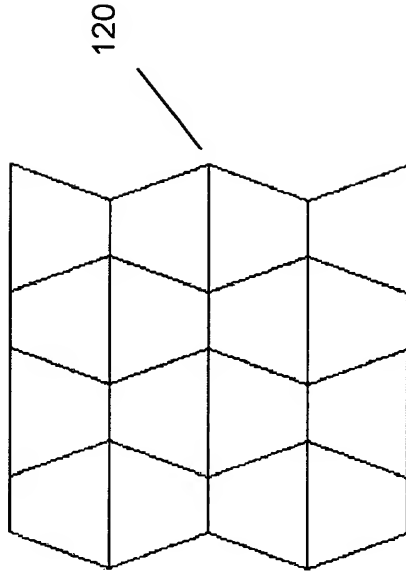


FIG. 1B

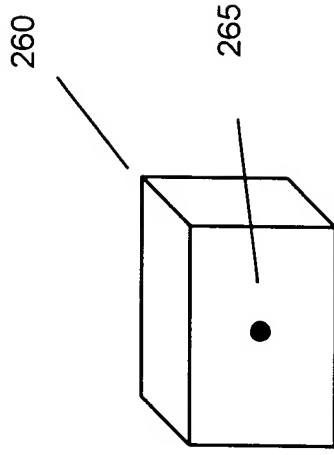


FIG. 2A

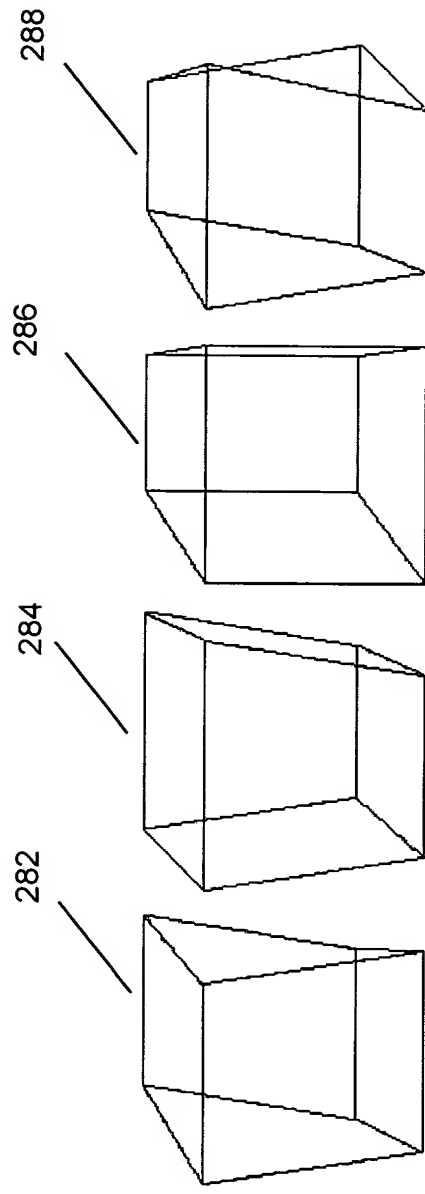


FIG. 2B

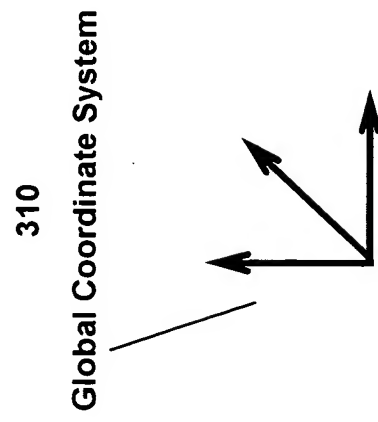
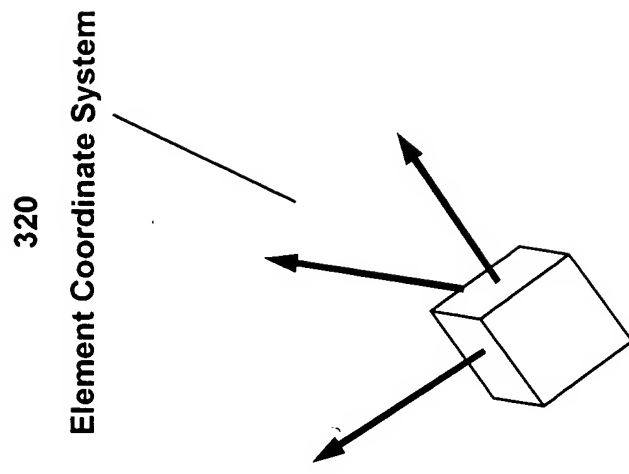


FIG. 3

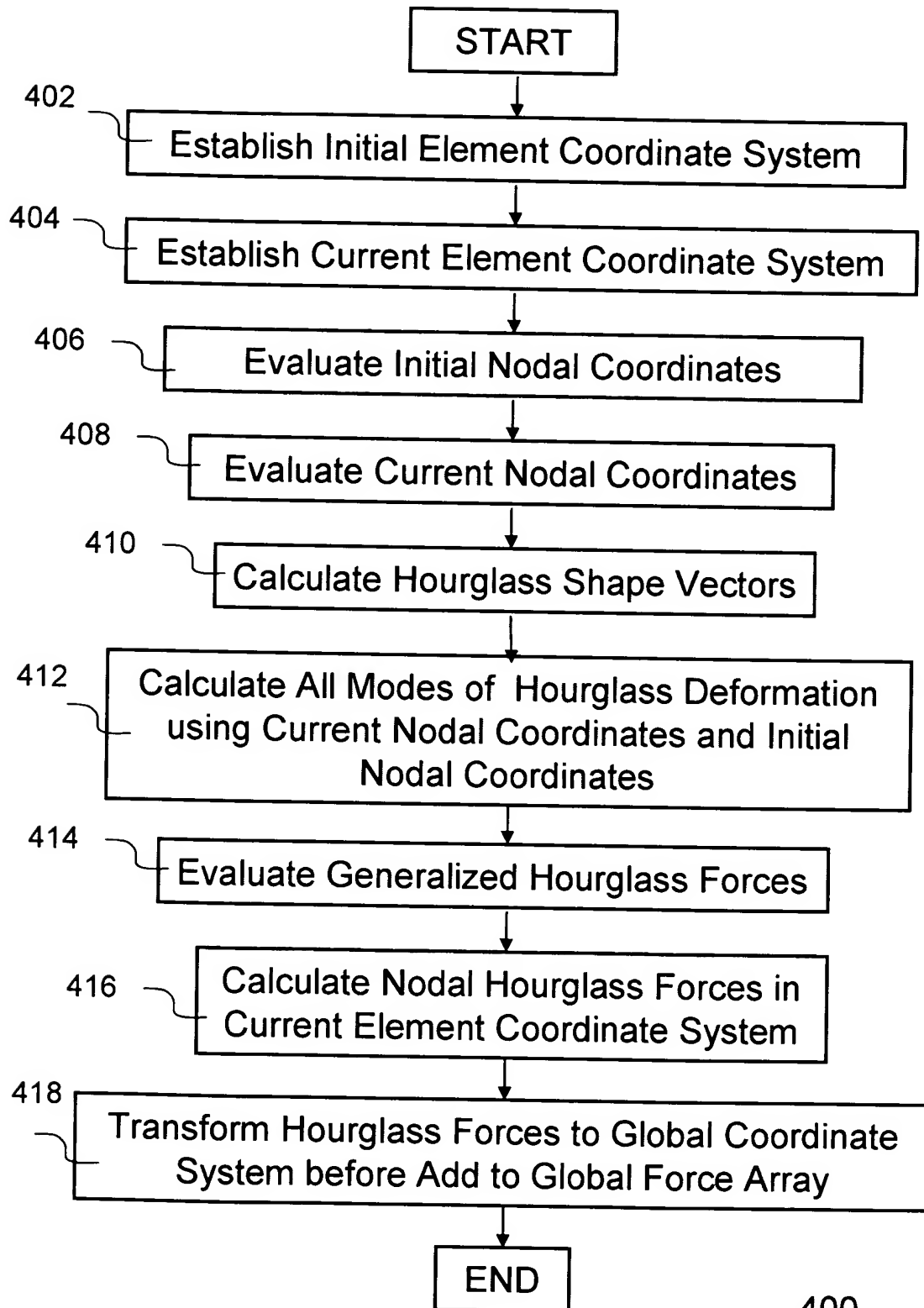


FIG. 4A

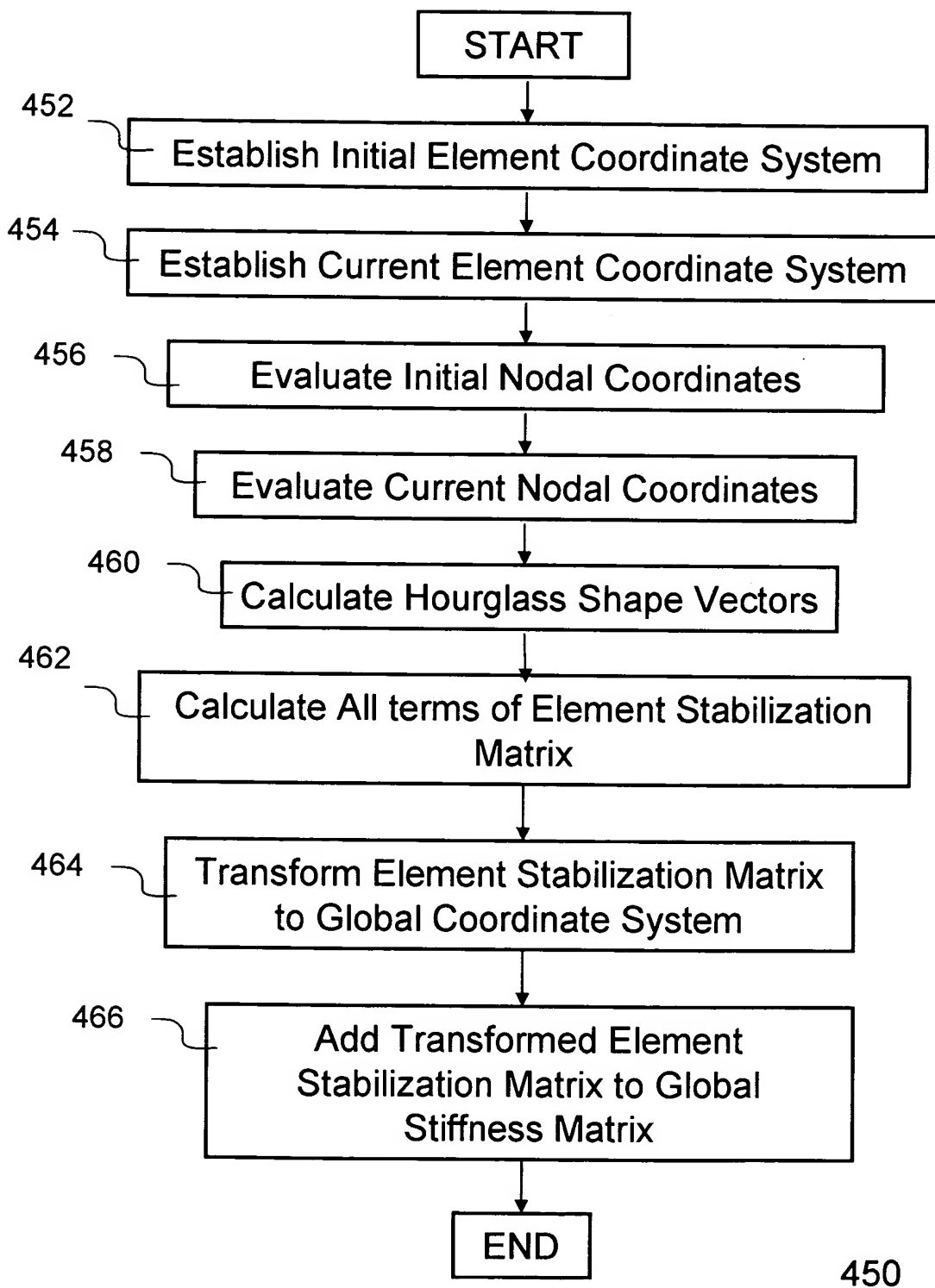


FIG. 4B

$$\bar{\gamma}_{\alpha l} = \Gamma_{\alpha l} - \sum_{i=1}^3 \left(\bar{B}_{il} \sum_{J=1}^8 \bar{X}_{iJ} \Gamma_{\alpha J} \right) \quad 510$$

$$\hat{g}_{i\alpha} = \sum_{J=1}^8 \bar{\gamma}_{\alpha J} (\hat{x}_{iJ} - \bar{X}_{iJ}) \quad 520$$

FIG. 5A

$$\begin{aligned}
 \hat{G}_{ii} &= \mu \left[\left(\bar{H}_{jj} + \bar{H}_{kk} \right) \hat{g}_{ii} + \bar{H}_{ij} \hat{g}_{jj} + \bar{H}_{ik} \hat{g}_{kk} \right] \\
 \hat{G}_{ij} &= \frac{2\mu}{1-\nu} \left[\bar{H}_{ii} \hat{g}_{ji} + \nu \bar{H}_{ij} \hat{g}_{ij} \right] \\
 \hat{G}_{i4} &= \frac{\mu}{3} \left[\frac{2}{(1-\nu)(1-2\nu)} \bar{H}_{ii} + \bar{H}_{jj} + \bar{H}_{kk} \right] \hat{g}_{i4}
 \end{aligned}
 \tag{530}$$

$$\begin{aligned}
 \bar{H}_{ii} &= \frac{1}{3} \frac{\sum_{J=1}^8 \xi_{jJ} \bar{X}_{jJ} \sum_{J=1}^8 \xi_{kJ} \bar{X}_{kJ}}{\sum_{J=1}^8 \xi_{iJ} \bar{X}_{iJ}} \\
 \bar{H}_{ij} &= \frac{1}{3} \sum_{J=1}^8 \xi_{kJ} \bar{X}_{kJ}
 \end{aligned}
 \tag{535}$$

$$\hat{f}_{i\alpha J} = \hat{G}_{i\alpha} \bar{\gamma}_{\alpha J}
 \tag{540}$$

FIG. 5B

580

J	1	2	3	4	5	6	7	8
Γ_{1J}	1	-1	1	-1	1	-1	1	-1
Γ_{2J}	-1	1	-1	-1	-1	-1	1	1
Γ_{3J}	1	-1	-1	1	-1	1	1	-1
Γ_{4J}	1	-1	1	-1	-1	1	-1	1

FIG. 5C

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J	1	2	3	4	5	6	7	8
ξ_{1J}	-1	1	1	-1	-1	1	1	-1
ξ_{2J}	-1	-1	1	1	-1	-1	1	1
ξ_{3J}	-1	-1	-1	-1	1	1	1	1

FIG. 5D

i	j	k
1	2	3
1	3	2
2	3	1
2	1	3
3	1	2
3	2	1

590

FIG. 5E

$$\gamma_j = \begin{Bmatrix} \overline{\gamma}_{j1} \\ \overline{\gamma}_{j2} \\ \overline{\gamma}_{j3} \\ \overline{\gamma}_{j4} \\ \overline{\gamma}_{j5} \\ \overline{\gamma}_{j6} \\ \overline{\gamma}_{j7} \\ \overline{\gamma}_{j8} \end{Bmatrix}$$

$$\gamma_j^T = \{ \overline{\gamma}_{j1}, \overline{\gamma}_{j2}, \overline{\gamma}_{j3}, \overline{\gamma}_{j4}, \overline{\gamma}_{j5}, \overline{\gamma}_{j6}, \overline{\gamma}_{j7}, \overline{\gamma}_{j8} \}$$

$$j = 1, 2, 3, 4$$

FIG. 5F

$$\begin{aligned}
k_{11} &= \mu H_{11} \left[\frac{2}{1-\nu} (\gamma_2 \gamma_2^T + \gamma_3 \gamma_3^T) + \frac{2(1-\nu)}{3(1-2\nu)} \gamma_4 \gamma_4^T \right] \\
&+ \mu (H_{22} + H_{33}) \left(\gamma_1 \gamma_1^T + \frac{1}{3} \gamma_4 \gamma_4^T \right) \\
k_{22} &= \mu H_{22} \left[\frac{2}{1-\nu} (\gamma_1 \gamma_1^T + \gamma_3 \gamma_3^T) + \frac{2(1-\nu)}{3(1-2\nu)} \gamma_4 \gamma_4^T \right] \\
&+ \mu (H_{11} + H_{33}) \left(\gamma_2 \gamma_2^T + \frac{1}{3} \gamma_4 \gamma_4^T \right) \\
k_{33} &= \mu H_{33} \left[\frac{2}{1-\nu} (\gamma_1 \gamma_1^T + \gamma_2 \gamma_2^T) + \frac{2(1-\nu)}{3(1-2\nu)} \gamma_4 \gamma_4^T \right] \\
&+ \mu (H_{11} + H_{22}) \left(\gamma_3 \gamma_3^T + \frac{1}{3} \gamma_4 \gamma_4^T \right)
\end{aligned}$$

FIG. 5G

$$k_{12} = \mu H_{12} \left[\frac{2\nu}{1-\nu} \gamma_2 \gamma_1^T + \gamma_1 \gamma_2^T \right]$$

$$k_{13} = \mu H_{13} \left[\frac{2\nu}{1-\nu} \gamma_3 \gamma_1^T + \gamma_1 \gamma_3^T \right]$$

$$k_{23} = \mu H_{23} \left[\frac{2\nu}{1-\nu} \gamma_3 \gamma_2^T + \gamma_2 \gamma_3^T \right]$$

$$k_{21} = k_{12}^T$$

$$k_{31} = k_{13}^T$$

$$k_{32} = k_{23}^T$$

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FIG. 5H

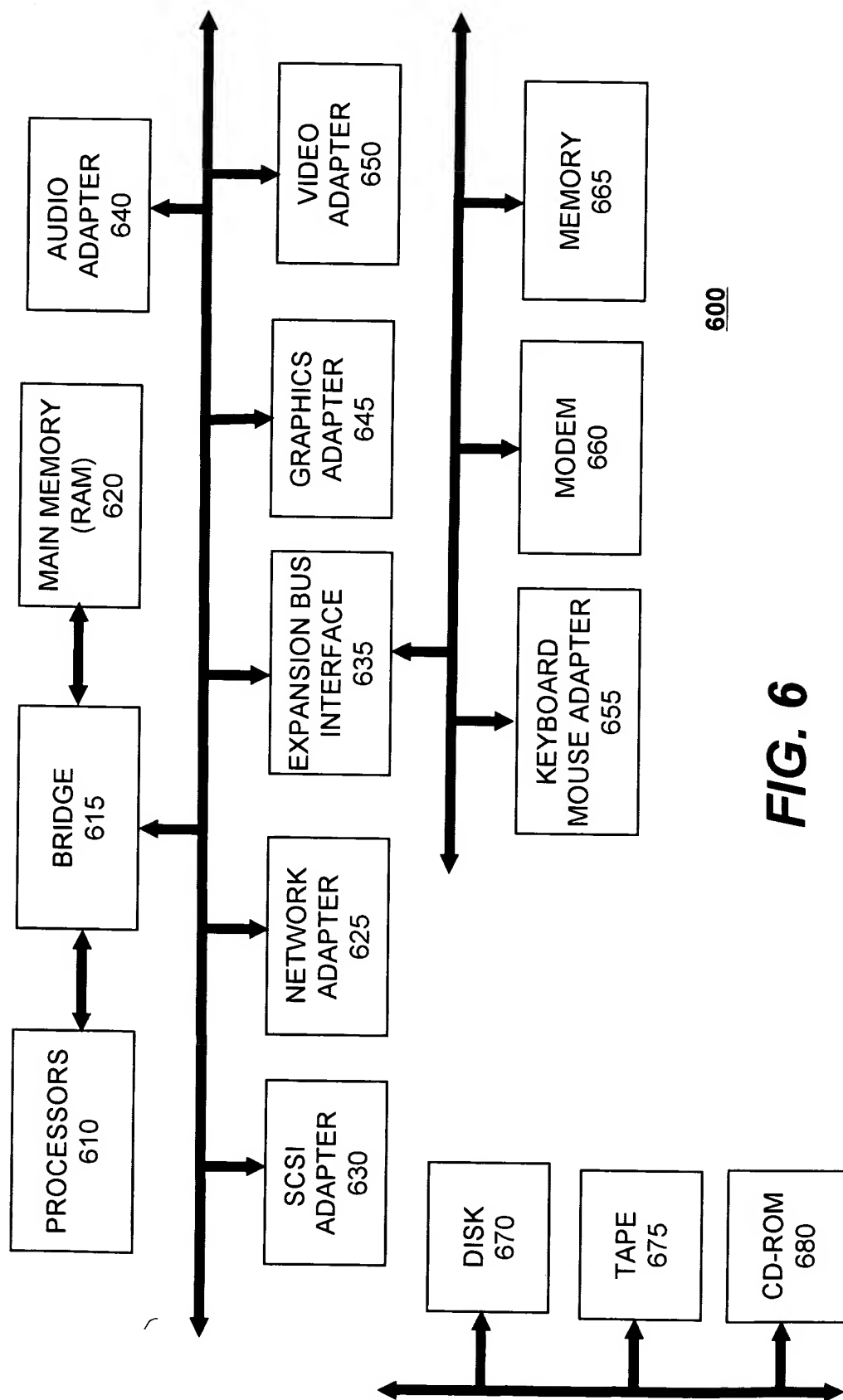


FIG. 6

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